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Image collection and annotation platforms to establish a multi-source database of oral lesions

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Abstract

Objective: To describe the development of a platform for image collection and annotation that resulted in a multi-sourced international image dataset of oral lesions to facilitate the development of automated lesion classification algorithms.

Materials and Methods: We developed a web-interface, hosted on a web server to collect oral lesions images from international partners. Further, we developed a customised annotation tool, also a web-interface for systematic annotation of images to build a rich clinically labelled dataset. We evaluated the sensitivities comparing referral decisions through the annotation process with the clinical diagnosis of the lesions.

Results: The image repository hosts 2474 images of oral lesions consisting of oral cancer, oral potentially malignant disorders and other oral lesions that were collected through MeMoSA (R) UPLOAD. Eight-hundred images were annotated by seven oral medicine specialists on MeMoSA (R) ANNOTATE, to mark the lesion and to collect clinical labels. The sensitivity in referral decision for all lesions that required a referral for cancer management/surveillance was moderate to high depending on the type of lesion (64.3%-100%).

Conclusion: This is the first description of a database with clinically labelled oral lesions. This database could accelerate the improvement of AI algorithms

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that can promote the early detection of high-risk oral lesions.

Keywords

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Keywords Plus: CANCER; CLASSIFICATION; DIAGNOSIS

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